UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF COMMERCIAL FISHERIES

CALIFORNIA FISHERY MARKET NEWS MONTHLY SUMMARY

September 1964

Part II–Fishing Information*

Sea-surface temperatures, fishing and research information of interest to the West Coast tuna-fishing industry and marine scientists

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Sea Surface Temperature Charts, Eastern Pacific Ocean, September 1

Bureau of Commercial Fisheries
Biological Laboratory
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San Diego 6, California

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SEA SURFACE TEMPERATURE CHARTS, EASTERN PACIFIC OCEAN

SEPTEMBER 1964

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U.S. Naval Communication Station Balboa, Fort Amador, Canal Zone
U.S. Weather Bureau Port Meteorological Office, Cristobal, Canal Zone
California Department of Fish and Game R/V Alaska
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Instituto Nacional de Pesca, Guayaquil, Ecuador
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Inter-American Tropical Tuna Commission, La Jolla and Terminal Island, California
Kelco Company, San Diego, California
Lifeguard Headquarters, Newport Beach, California
Pacific Oceanographic Group, Nanaimo, British Columbia, by H. J. Hollister from observations by R. Collins at Quatsino Lightstation; T. Quon at Cape St. James Light; R. Stuart at Amphitrite Point Light; W. E. Redlac at Langara Island Light
Scripps Institution of Oceanography, La Jolla, California by Margaret Robinson and Hans Klein
Ships Monsoon, Royal Pacific and West Point

Charts

Figure 1.--Mean sea surface temperatures (°F) derived from approximately 8000 observations. Squares show temperatures at weather-ship stations. Numerals on shore are temperatures at coastal and light-ship stations.

Figure 2.--Deviation of sea surface temperatures (°F) from long term charts of H.O. 225. Hatched areas are colder than mean.

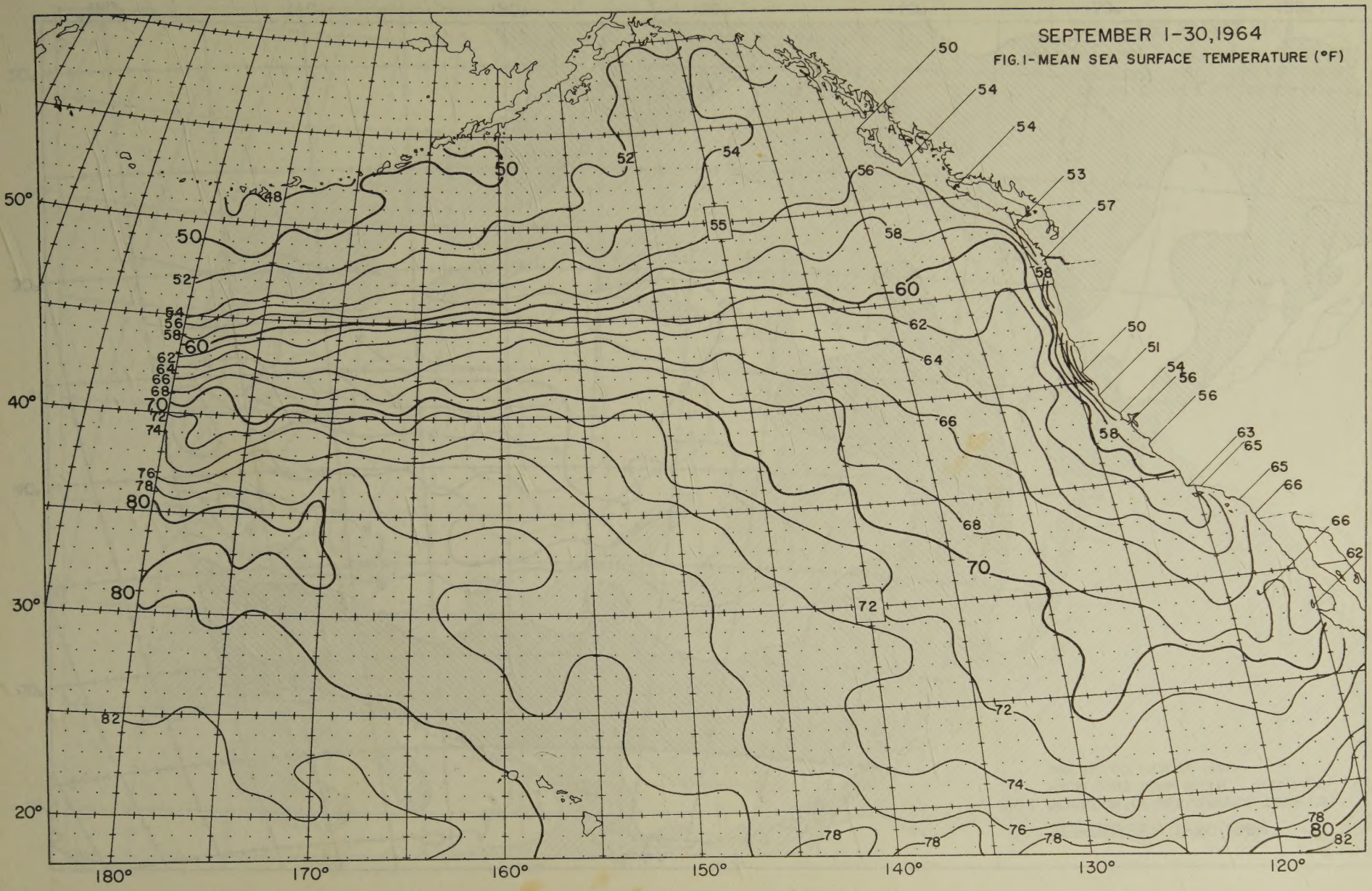
Figure 3.--Deviation of sea surface temperatures (°F) from those of September 1963. Hatched areas are colder than 1963.

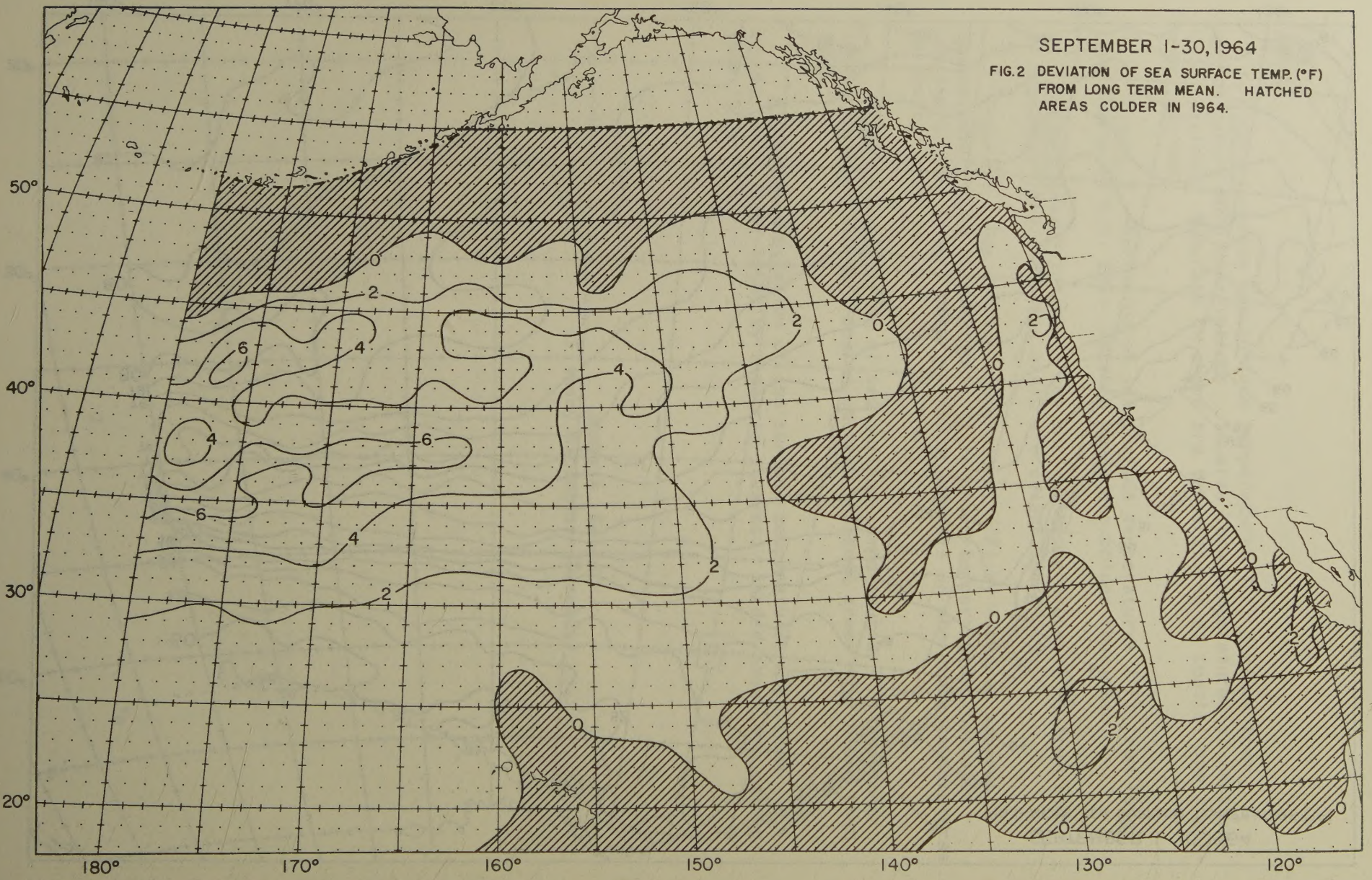
Figure 4.--Sea surface temperatures (°F) by 1-degree squares, approximately 2000 observations. Line under temperatures indicates average of two or more observations. Numerals on shore are temperatures at coastal stations.

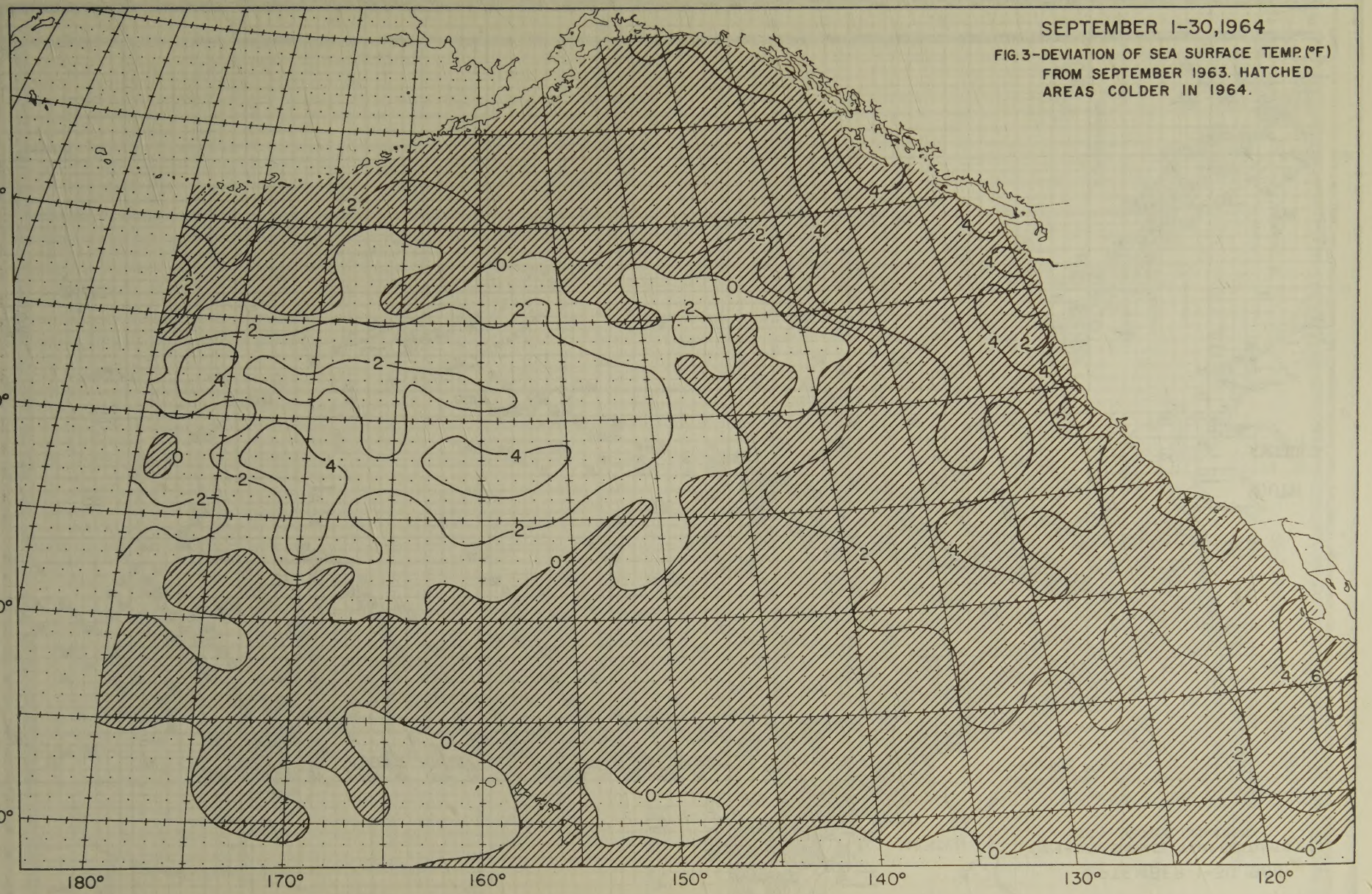
Figure 5.--Deviation of sea surface temperatures (°F) September 1964-September 1963 by 1-degree squares. Shaded areas are colder than 1963.

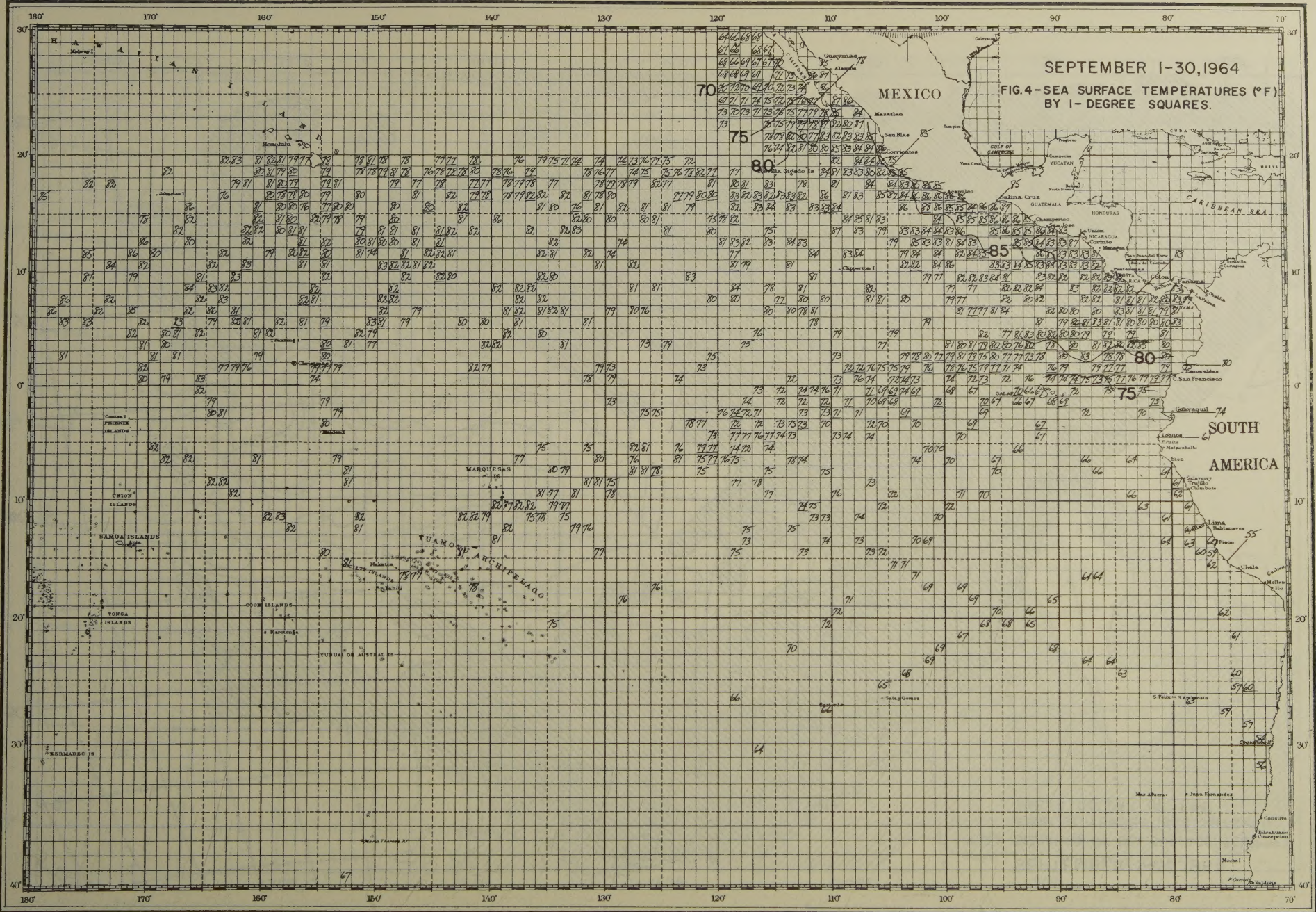
Figure 6.--Deviation of sea surface temperatures (°F) from 12-year mean (1947-1958) by 2-degree squares. Shaded areas are colder than 1963.

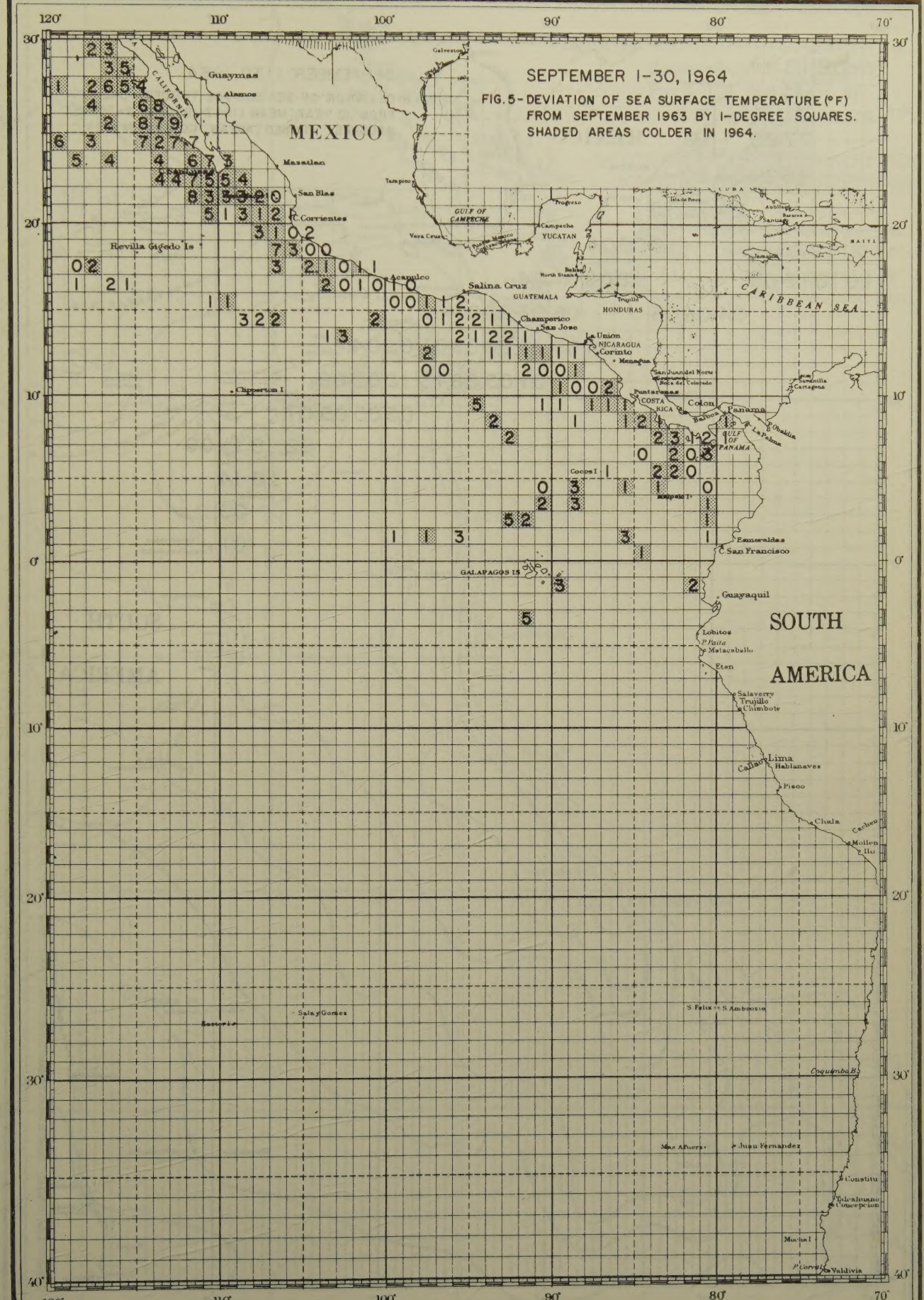
James A. Renner
Fishery Biologist (General)

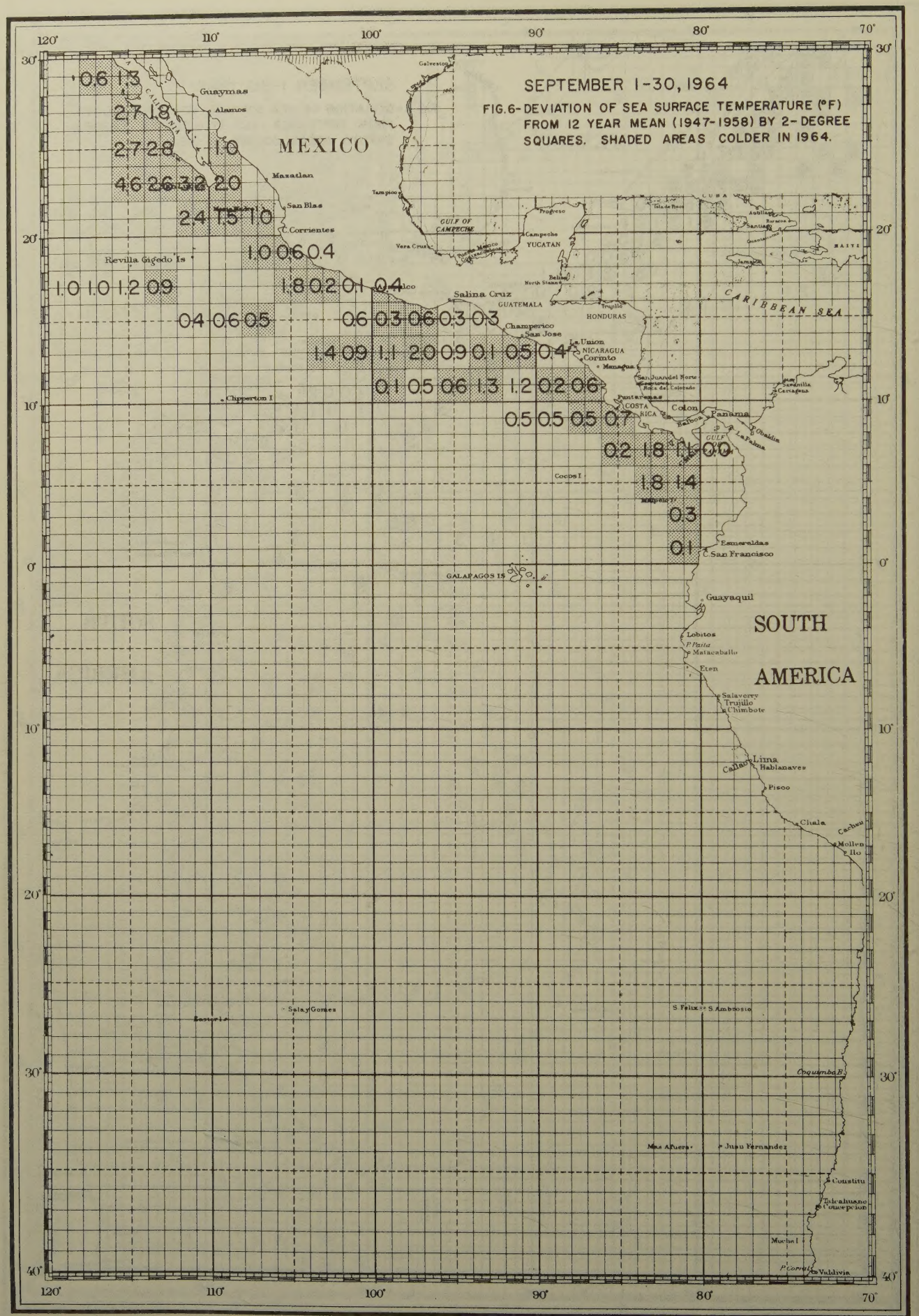

SEPTEMBER 1-30, 1964
FIG. 1- MEAN SEA SURFACE TEMPERATURE (°F)
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°

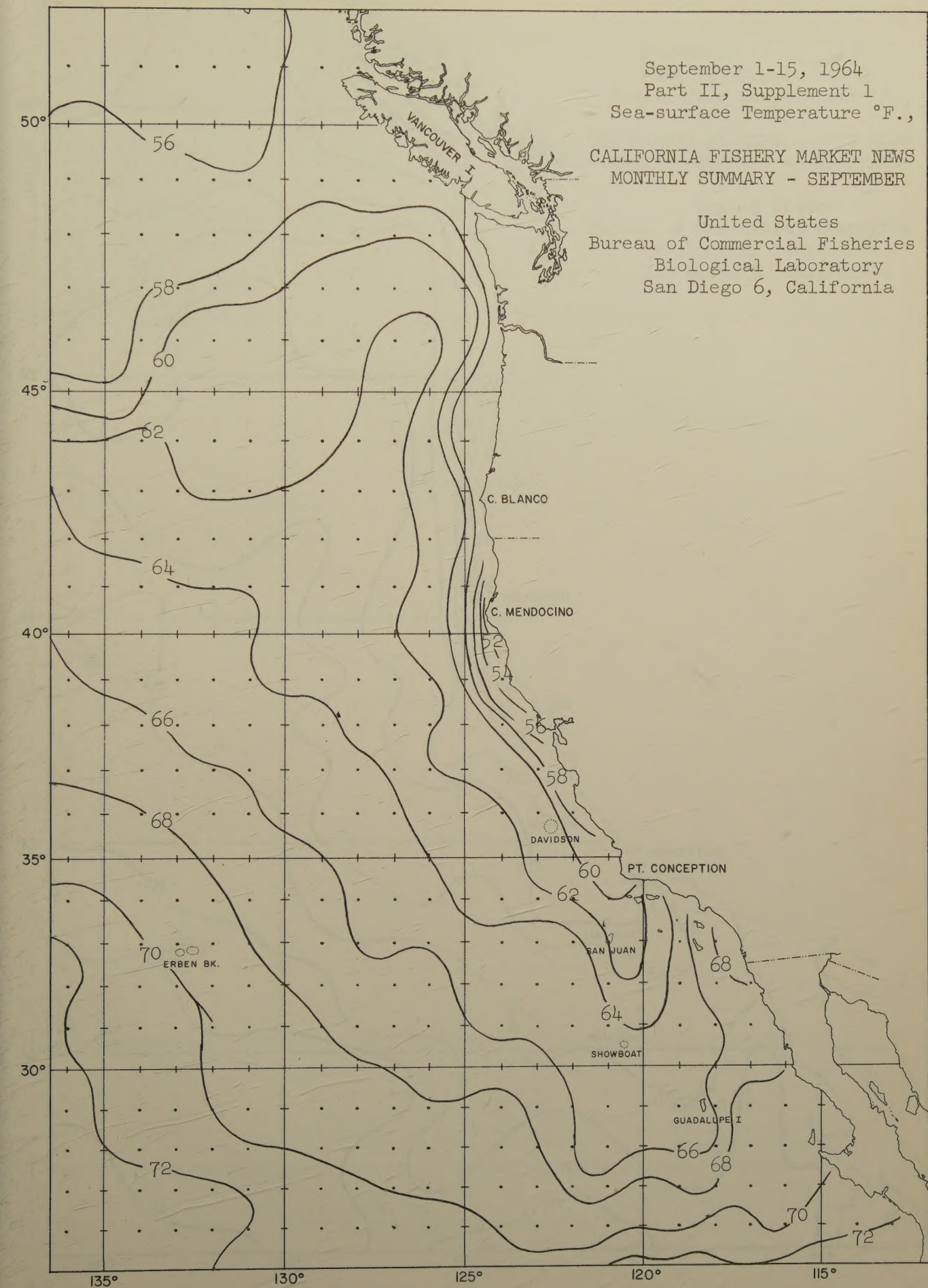

SEPTEMBER 1-30, 1964
FIG. 2 DEVIATION OF SEA SURFACE TEMP. (°F) FROM LONG TERM MEAN. HATCHED AREAS COLDER IN 1964.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°
0
2
4
6


SEPTEMBER 1-30,1964
FIG. 3-DEVIATION OF SEA SURFACE TEMP. (°F) FROM SEPTEMBER 1963. HATCHED AREAS COLDER IN 1964.
50°
40°
30°
20°
180°
170°
160°
150°
140°
130°
120°


SEPTEMBER 1-30, 1964
FIG. 4 - SEA SURFACE TEMPERATURES (°F) BY 1- DEGREE SQUARES.
MEXICO
SOUTH AMERICA
HAWAIIAN ISLANDS
Honolulu
Johnston I.
Canton I.
PHOENIX ISLANDS
Enderbury I.
UNION ISLANDS
SAMOA ISLANDS
TONGA ISLANDS
COOK ISLANDS
Rarotonga
MARQUESAS
TUAMOTU ARCHIPELAGO
Tahiti
Makatea
TUBUAI OR AUSTRAL IS.
KERMADEC IS.
Sala y Gomez
Easter I.
Juan Fernandez
Mas A Fuera
Mocha I.
Guaymas
Mazatlan
San Blas
Corrientes
Isla Socorro
Acapulco
Salina Cruz
GUATEMALA
HONDURAS
Champerico
Corinto
Chipperton I.
Galapagos Is.
Guayaquil
Salaverry
Trujillo
Chimbote
Lima
Callao
Pisco
Chala
Mollendo
Arica
Iquique
Tocopilla
Antofagasta
Caldera
Coquimbo
Valparaiso
San Antonio
Talcahuano
Concepcion
Constitucion
San Felix
San Ambrosio
Juan Fernandez
Mas A Fuera
Mocha I.
Corral
Valdivia
CARIBBEAN SEA
GULF OF CALIFORNIA
YUCATAN
Progreso
Veracruz
Tampico
Belize
Puerto Barrios
Puerto Cortes
Managua
Puntarenas
Cristobal
Panama
Balboa
Colon
Curacao
Maracaibo
Puerto Cabello
La Guaira
Barranquilla
Cartagena
Aruba
Trinidad
Tobago
Barbados
Martinique
Guadeloupe
Jamaica
Haiti
Cuba
Havana
Nassau
Bermuda
Galveston
Mobile
Key West
Miami
Tampa
Charleston
Norfolk
Cape Hatteras
Cape Cod
Boston
New York
Philadelphia
Baltimore
Washington
Chesapeake Bay
Delaware Bay
Long Island
Nantucket
Bahama Is.
Azores
Bermuda
Cape Verde Is.
Canary Is.
Madeira
Gibraltar
Algiers
Tripoli
Alexandria
Suez
Aden
Mombasa
Zanzibar
Dar es Salaam
Beira
Lourenco Marques
Durban
Port Elizabeth
Cape Town
Walvis Bay
Luanda
Pointe Noire
Libreville
Douala
Lagos
Accra
Abidjan
Freetown
Dakar
Monrovia
Takoradi
Tema
Cotonou
Port Harcourt
Calabar
Victoria
Port Said
Haifa
Beirut
Istanbul
Piraeus
Naples
Genoa
Marseilles
Barcelona
Lisbon
Oporto
Vigo
Bilbao
Le Havre
Cherbourg
Dover
Hamburg
Bremen
Rotterdam
Antwerp
Dublin
Belfast
Glasgow
Liverpool
Manchester
Hull
Edinburgh
Aberdeen
Reykjavik
Oslo
Stockholm
Helsinki
Leningrad
Murmansk
Archangel
Gdynia
Danzig
Copenhagen
Gothenburg
Malmo
Aalborg
Esbjerg
Skagen
Faroe Is.
Shetland Is.
Orkney Is.
Hebrides
Irish Sea
English Channel
North Sea
Baltic Sea
Gulf of Bothnia
Gulf of Finland
Gulf of Riga
Gulf of Lyons
Gulf of Genoa
Gulf of Naples
Gulf of Taranto
Gulf of Sidra
Gulf of Suez
Gulf of Aden
Gulf of Oman
Persian Gulf
Red Sea
Arabian Sea
Bay of Bengal
Andaman Sea
Malacca Strait
Singapore
Java Sea
Timor Sea
Arafura Sea
Coral Sea
Tasman Sea
Great Australian Bight
Gulf of Carpentaria
Torres Strait
Great Barrier Reef
Port Moresby
Rabaul
Noumea
Suva
Auckland
Wellington
Christchurch
Dunedin
Hobart
Melbourne
Sydney
Brisbane
Townsville
Cairns
Darwin
Broome
Fremantle
Albany
Adelaide
Port Lincoln
Perth
Geraldton
Carnarvon
Port Hedland
Derby
Wyndham
Groote Eylandt
Gove
Weipa
Thursday I.
Horn I.
Daru
Port Moresby
Lae
Madang
Wewak
Manus I.
Kavieng
Rabaul
Buka I.
Bougainville I.
Guadalcanal
Malaita
San Cristobal
Santa Cruz Is.
New Hebrides
New Caledonia
Loyalty Is.
Fiji Is.
Tonga Is.
Samoa Is.
Niue I.
Rarotonga
Aitutaki
Penrhyn I.
Manihiki
Rakahanga
Pukapuka
Nassau I.
Suwarrow I.
Palmerston I.
Niue I.
Tokelau Is.
Swains I.
Jarvis I.
Howland I.
Baker I.
Phoenix Is.
Canton I.
Enderbury I.
Christmas I.
Fanning I.
Washington I.
Line Is.
Tuamotu Archipelago
Marquesas Is.
Society Is.
Tahiti
Austral Is.
Rapa I.
Pitcairn I.
Gambier Is.
Easter I.
Sala y Gomez
San Felix
San Ambrosio
Juan Fernandez
Mas A Fuera
Mocha I.
Corral
Valdivia
Puerto Montt
Chiloe I.
Taitao Pen.
Golfo de Penas
Strait of Magellan
Tierra del Fuego
Cape Horn
Falkland Is.
South Georgia
South Sandwich Is.
South Orkney Is.
South Shetland Is.
Graham Land
Weddell Sea
Ross Sea
Ross Ice Shelf
Victoria Land
Marie Byrd Land
Ellsworth Land
Palmer Land
Antarctic Peninsula
Bellingshausen Sea
Amundsen Sea
Pine Island Bay
Thurston I.
Peter I. I.
Balleny Is.
Scott I.
Macquarie I.
Auckland Is.
Campbell I.
Antipodes Is.
Bounty Is.
Chatham Is.
Kermadec Is.
Norfolk I.
Lord Howe I.
Middleton Reef
Elizabeth Reef
Hunter I.
Gambier Is.
Pitcairn I.
Henderson I.
Ducie I.
Oeno I.
Marcus I.
Wake I.
Johnston I.
Palmyra I.
Kingman Reef
Christmas I.
Fanning I.
Washington I.
Line Is.
Phoenix Is.
Canton I.
Enderbury I.
Howland I.
Baker I.
Jarvis I.
Swains I.
Tokelau Is.
Nassau I.
Suwarrow I.
Palmerston I.
Niue I.
Rarotonga
Aitutaki
Penrhyn I.
Manihiki
Rakahanga
Pukapuka
Samoa Is.
Tonga Is.
Fiji Is.
New Caledonia
Loyalty Is.
New Hebrides
Santa Cruz Is.
Solomon Is.
Guadalcanal
Malaita
San Cristobal
Bougainville I.
Buka I.
Rabaul
Kavieng
Manus I.
Wewak
Madang
Lae
Daru
Port Moresby
Thursday I.
Horn I.
Weipa
Gove
Groote Eylandt
Wyndham
Derby
Broome
Port Hedland
Carnarvon
Geraldton
Perth
Fremantle
Albany
Adelaide
Port Lincoln
Melbourne
Hobart
Sydney
Brisbane
Townsville
Cairns
Darwin
Timor Sea
Arafura Sea
Coral Sea
Tasman Sea
Great Australian Bight
Gulf of Carpentaria
Torres Strait
Great Barrier Reef
Bass Strait
Port Phillip Bay
Spencer Gulf
Gulf St. Vincent
Shark Bay
Exmouth Gulf
Cape Leeuwin
Cape Naturaliste
Cape Otway
Cape Howe
Cape Everard
Cape Wilson
Cape Grim
Cape Pillar
Tasman Peninsula
Bruny I.
Maria Island
Flinders I.
King I.
Furneaux Group
Kangaroo I.
Yorke Pen.
Eyre Pen.
Spencer Gulf
Gulf St. Vincent
Port Lincoln
Port Pirie
Whyalla
Port Augusta
Port Adelaide
Victor Harbor
Robe
Mount Gambier
Portland
Warrnambool
Port Fairy
Geelong
Port Phillip Bay
Melbourne
Westernport Bay
Wilsons Promontory
Lakes Entrance
Eden
Jervis Bay
Port Hacking
Botany Bay
Port Jackson
Broken Bay
Newcastle
Port Stephens
Hunter River
Sydney
Wollongong
Shoalhaven
Batemans Bay
Moruya
Tuross Head
Bermagui
Merimbula
Eden
Twofold Bay
Gabo I.
Cape Howe
Cape Everard
Cape Wilson
Cape Grim
Cape Pillar
Tasman Peninsula
Bruny I.
Maria Island
Flinders I.
King I.
Furneaux Group
Kangaroo I.
Yorke Pen.
Eyre Pen.
Spencer Gulf
Gulf St. Vincent
Port Lincoln
Port Pirie
Whyalla
Port Augusta
Port Adelaide
Victor Harbor
Robe
Mount Gambier
Portland
Warrnambool
Port Fairy
Geelong
Port Phillip Bay
Melbourne
Westernport Bay
Wilsons Promontory
Lakes Entrance
Eden
Jervis Bay
Port Hacking
Botany Bay
Port Jackson
Broken Bay
Newcastle
Port Stephens
Hunter River
Sydney
Wollongong
Shoalhaven
Batemans Bay
Moruya
Tuross Head
Bermagui
Merimbula
Eden
Twofold Bay
Gabo I.


SEPTEMBER 1-30, 1964
FIG. 5 - DEVIATION OF SEA SURFACE TEMPERATURE (°F) FROM SEPTEMBER 1963 BY 1-DEGREE SQUARES. SHADED AREAS COLDER IN 1964.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CALIFORNIA
GULF OF CAMPECHE
GULF OF PANAMA
Guaymas
Alamos
Mazatlan
San Blas
C Corrientes
Revilla Gigedo Is
Acapulco
Salina Cruz
GUATEMALA
HONDURAS
Champerico
San Jose
La Union
NICARAGUA
Corinto
Managua
Chippertim I
COSTA RICA
Puntarenas
Colon
Panama
Balboa
Cocos I
GALAPAGOS IS
Esmeraldas
C San Francisco
Guayaquil
Lobitos
P Pasta
P Malagabello
Eten
Salaverry
Trujillo
Chimbote
Callao
Lima
Hablanaves
Pisco
Chala
Cachen
Mollendo
Ilo
Salas y Gomez
S Felix
S Ambrosio
Coquimbo
Mas Afuera
P Juan Fernandez
Constitu
Talcahuano
Concepcion
Mocha I
Corral
Valdivia
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
40°


SEPTEMBER 1-30, 1964
FIG.6-DEVIATION OF SEA SURFACE TEMPERATURE (°F) FROM 12 YEAR MEAN (1947-1958) BY 2-DEGREE SQUARES. SHADED AREAS COLDER IN 1964.
MEXICO
SOUTH AMERICA
CARIBBEAN SEA
GULF OF CAMPECHE
GALAPAGOS IS
0.6 1.3
2.7 1.8
2.7 2.8 1.0
4.6 2.6 3.2 2.0
2.4 1.5 1.0
1.0 0.6 0.4
1.0 1.0 1.2 0.9
1.8 0.2 0.1 0.4
0.4 0.6 0.5
0.6 0.3 0.6 0.3 0.3
1.4 0.9 1.1 2.0 0.9 0.1 0.5 0.4
0.1 0.5 0.6 1.3 1.2 0.2 0.6
0.5 0.5 0.5 0.7
0.2 1.8 1.6 0.0
1.8 1.4
0.3
0.1
Guaymas
Alamos
Mazatlan
San Blas
C. Corrientes
Revilla Gigedo Is
Salina Cruz
Champerico
San Jose
La Union
Corinto
Managua
Chippertun I
Cocos I
Esmeraldas
C. San Francisco
Guayaquil
Lobitos
Talara
Matacaballo
Eten
Salaverry
Trujillo
Chimbote
Lima
Callao
Hablanaves
Pisco
Chala
Cachus
Mollendo
Sala y Gomez
Easter I.
S. Felix
S. Ambrosio
Coquimbo
Mas Afuera
Juan Fernandez
Constitu
Talcahuano
Concepcion
Mocha I.
Valdivia
Tampico
Vera Cruz
Progreso
Campeche
YUCATAN
Belize
Guatemala
Honduras
Trujillo
Panama
Colon
Costa Rica
Cuba
Haiti
Jamaica
Cartagena
Galveston
120°
110°
100°
90°
80°
70°
30°
20°
10°
0°
40°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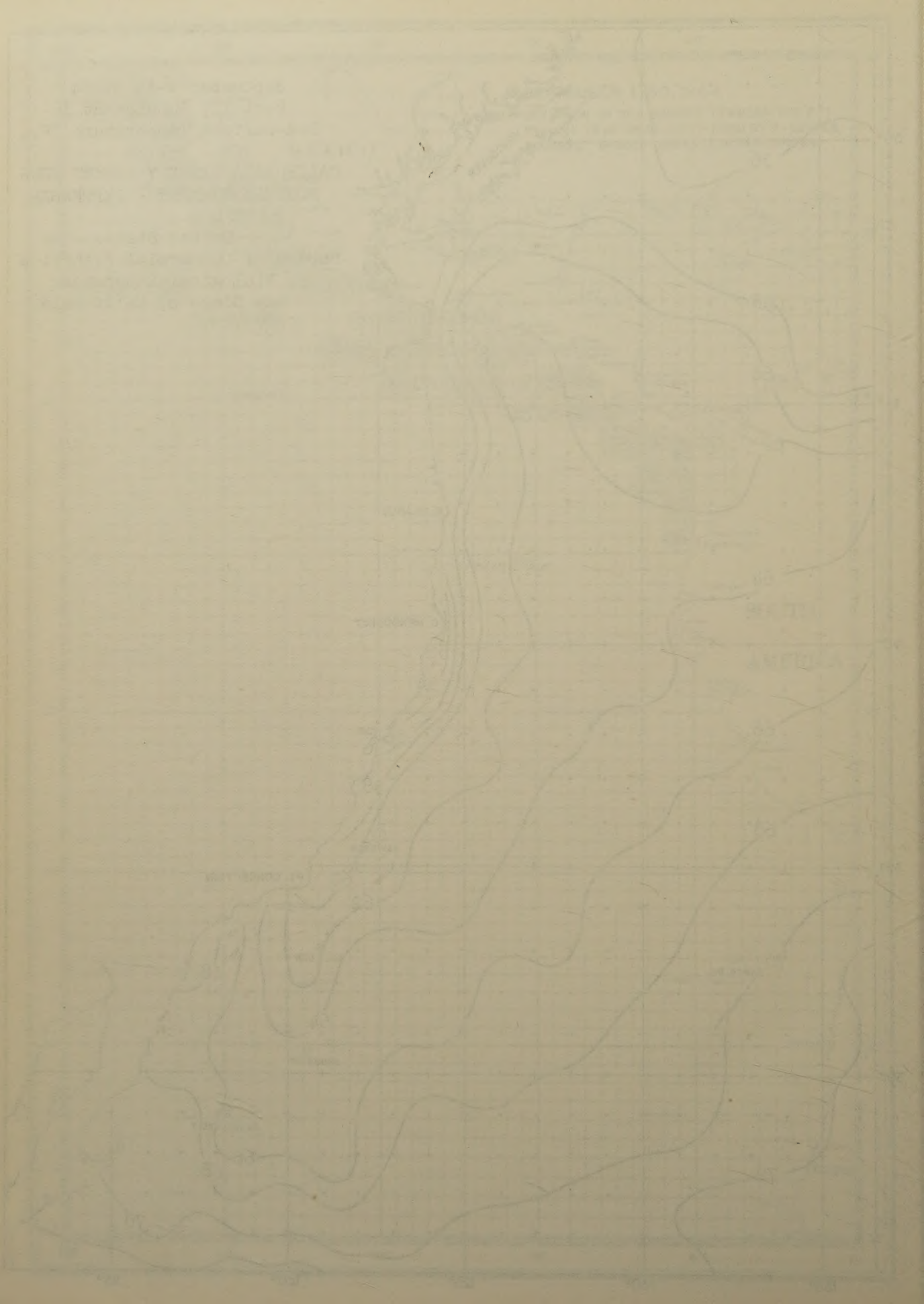
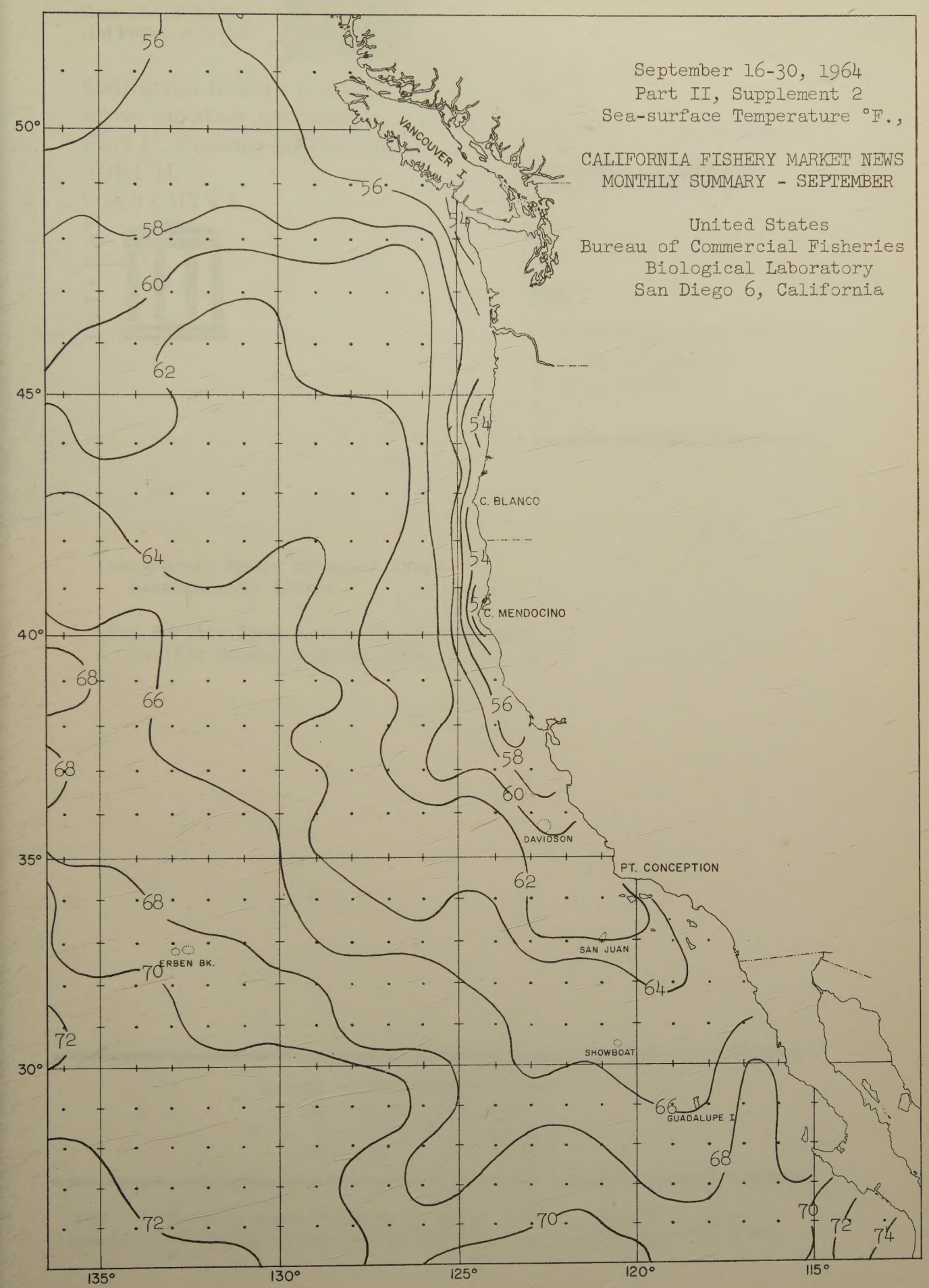
Part II, Supplement 1
Sea-surface Temperature °F.,
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - SEPTEMBER
United States
Bureau of Commercial Fisheries
Biological Laboratory
San Diego 6, California
VANCOUVER I
C. BLANCO
C. MENDOCINO
DAVIDSON
PT. CONCEPTION
SAN JUAN
SHOWBOAT
GUADALUPE I
ERBEN BK.
50°
45°
40°
35°
30°
135°
130°
125°
120°
115°
56
58
60
62
64
66
68
70
72
52
54




September 16-30, 1964
Part II, Supplement 2
Sea-surface Temperature °F.,
CALIFORNIA FISHERY MARKET NEWS
MONTHLY SUMMARY - SEPTEMBER
United States
Bureau of Commercial Fisheries
Biological Laboratory
San Diego 6, California
VANCOUVER I.
C. BLANCO
C. MENDOCINO
DAVIDSON
PT. CONCEPTION
SAN JUAN
ERBEN BK.
SHOWBOAT
GUADALUPE I
50°
45°
40°
35°
30°
135°
130°
125°
120°
115°
56
58
60
62
64
54
66
68
70
72
74